

SWBAT: identify properties of magnets

Jan 4-7:20 AM

SECA Physics  
Friday 13 March 2015

# Welcome!!!

H. Leslie Grebe

- \* Pick up:
- slip of paper (for later)

Test Tuesday!

Opening Question:

Can we turn magnets on and off???

$\frac{Y}{I}$     $\frac{N}{I}$

Centering

Sep 7-7:04 AM



## Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/27

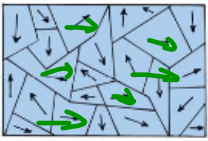
Jan 19-7:12 AM

What we OBSERVED	What it MEANS	What's the BIG IDEA?
N'S ATTRACT N & N REPEL S & S REPEL	<sup>OPPOSITES</sup> FORCES! MAGNETS MAKE FORCES	MAGNETS ARE DIPOLES N'S <u>NOT</u> + -
N TO WHITE S TO RED POINTER MOVES EVEN WITHOUT TOUCHING	COMPASS REACTS TO MAGNETIC FORCES	MAGNETS MAKE MAGNETIC FIELDS!
CURRENT IN WIRE IT MADE COMPASS ARROW MOVE!	CURRENT MAKES MAGNETIC FORCES	CURRENT MAKES MAGNETIC FIELDS TOO!

Catchy Physics Phrases...

Mar 25-7:45 AM

Copper...  NOT MAGNETIC

Ferromagnetic  ARE NOT MAGNETS  
BUT BECOME  
MAGNETIC WHEN  
IN A MAGNETIC  
FIELD

Only a few substances are ferromagnetic

- \* Iron (which is in steel)
- \* Nickel
- \* Cobalt, ...

Mar 28-7:37 AM

How do they get the stuff off of this magnet???



ELECTROMAGNET

SWITCH  
TURN  
IT  
OFF

Mar 28-7:38 AM

**Build your own!**

- \* Wrap **HALF** your wire around the nail
- \* When ready to experiment, touch wire to battery terminals (don't leave it on too long or wire will heat up)

Questions:

1) Which end of the compass does your nail attract?

**SILVER, FLIPPED → RED**

2) About how many staples can you pick up? **1**

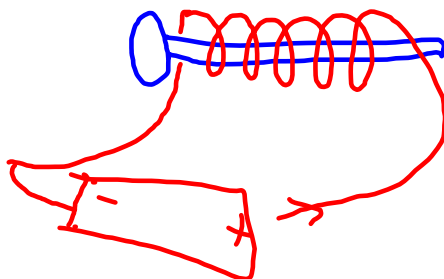
Mar 28-7:38 AM

Now wrap the other half of the wire around.

How many staples does it pick up now?

**1 → 5 or 7      MORE LOOPS  
⇒ STRONGER MAGNET**

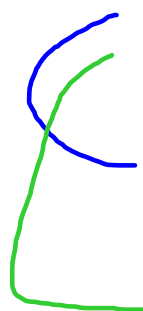
The right hand rule for solenoids...



**If I curl the fingers of my right hand in the direction current flows, my thumb will point north.**

Mar 28-7:39 AM

So what's the difference between a permanent magnet & an electromagnet?



electrons spinning around magnets align to create a magnetic field

loops of electric current create a magnetic field

=> They work the same way!!!

Mar 28-7:39 AM

### Daily 3 Questions

- \* Every day except test/project days
- \* 3 Questions on the topics of the day
- \* Main source of daily points
- \* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

CP homework - Higher-order questions due today

You can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. Are there magnets we can turn on and off?

YES

2. What does more <sup>LOOPS</sup> turns of wire (in the same direction) do to the strength of our electromagnet?

STRONGER

3. If I curve the fingers on my right hand to follow the current, my thumb points NORTH .

Feb 18-6:59 AM